DOCUMENT RESUME

ED 282 170 CG 019 938

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TITLE Levels of Processing, Academic Achievement and Locus of Control.
PUB DATE 16 Apr 87
NOTE 15p.; Paper presented at the Annual Convention of the Southwestern Psychological Association (33rd, New Orleans, LA, April 16-18, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *Cognitive Development; Cognitive Processes; *College Students; *Grade Point Average; Higher Education; *Learning Processes; *Locus of Control
IDENTIFIERS *Inventory of Learning Processes

ABSTRACT

Several researchers have examined the relationship between scales of the Inventory of Learning Processes (ILP) and the academic performance of college students. This study sought to determine whether there were significant correlations among levels of processing, locus of control, and achievement for college students. Subjects (N=50) enrolled in two introduction to psychology classes completed the ILP, Levenson's Locus of Control inventory, and a Psychology Test prepared for this study. The Psychology Test was administered immediately following a unit on learning and again one week later. The ILP was scored for Deep Processing, Elaborative Processing, Fact Retention, and Methodical Study. The Psychology Test was scored for factual, comprehension, application, and total scores. For the ILP, the results revealed significant and positive relationships between: (1) Deep Processing and Elaborative Processing, Fact Retention, and Methodical Study, respectively; (2) Elaborative Processing and Methodical Study; and (3) Factual Retention and Methodical Study. Scores on the ILP Deep Processing scale correlated negatively and significantly with the Powerful Others and Chance scales of the Locus of Control inventory. None of the correlations between the scales of the Locus of Control inventory and the ILP and subtests and totals of the Psychology Test were significant. The factual subtest and total Psychology Test were the only positive and significant correlations with grade point averages. Future research should employ larger samples. (NB)

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LEVELS OF PROCESSING, ACADEMIC ACHIEVEMENT AND LOCUS OF CONTROL

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Paper presented at

Southwestern Psychological Association

Thirty-third Annual Convention

held at

New Orleans, Louisiana

April 16, 1987

CS 019938

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LEVELS OF PROCESSING, ACADEMIC ACHIEVEMENT AND LOCUS OF CONTROL

B. M. Gadzella, D. W. Ginther, and P. Higgins

In 1977, Schmeck and his associates (Schmeck, Ribich, & Ramanaiah, 1977) reported validity studies with their initial development of the Inventory of Learning Processes, ILP, (Schmeck, 1983). In one study, subjects watched a videotape of an introduction psychology lecture while supposedly trying to "judge its complexity." After that they were administered (unannounced) a 30-item multiple-choice test composed of 15 knowledge-level items and 15 comphrension-level items (Bloom, 1956). The analysis of the data showed significant and positive correlations between the performance on the test and both Deep Processing (r = .42) and Elaborative Processing (r = .51) scales.

In another study, Schmeck et al. (1977) reported a traditional memory study employing a list of 15 concrete and 15 abstract nouns. Half of the group were told about the test, half were not. All subjects were given recall and recognition tests on memory. The results showed positive and significant relationships between memory for word list and both Deep Processing (r = .50) and Elaborative Processing (r = .35) scales.

In a study reported by Meier, McCarthy and Schmeck (1984), Deep Processing Scale of the ILP correlated positively with

internality on a locus of control dimension. In 1979, Schmeck and Grove conducted an extensive study of the relationship between the ILP scales and academic performance of college students. They reported that students with high grade-point averages (GPA) and high ACT scores tended to score high on Deep Processing, Fact Retention, and Elaborative Processing scales. Watkins and Hattie (1981) reported that the ILP scales were good predictors of academic achievement.

The purpose of this study was to investigate if there were significant correlations among levels of processing, locus of control, and achievement for students enrolled in two introduction to psychology classes. The predictions were that there would be significant correlations at least among some of the variables studied.

METHOD

Subjects. The Ss were 50 students enrolled in two introduction to psychology classes (taught by one instructor) who agreed to participate in the study. In this group, there were 23 men and 27 women, of which 19 were freshmen, 13 sophomores, 5 juniors,and 13 seniors.

Instruments. Three instruments were used in this study: Inventory of Learning Processes (ILP) (Schmeck, Ribich & Ramanaiah, 1977); Levenson's (1981) Locus of Control inventory, and a Psychology Test prepared by the investigators of the present study.

The ILP is a self-reporting, true-false instrument indicating how individuals process the information they study.

Originally, the inventory had 121 items. It was administered to 503 students. Their responses were factor analyzed and the results were that four groups emerged with 62 items. (See description of scales on separate sheet).

Levenson (1981) redesigned the Rotter I-E scale to include the scales of Internal, Powerful Others, and Chance. The Internal and Powerful Others are interpreted in the same manner as the corresponding Rotter I-E scales. Persons scoring high on thr Internal Scale believe they have good personal control of life experiences, while persons scoring high on the Powerful Others scale feel that significant people greatly influence their decisions and behavior. Levenson's Chance scale is designed to be sensitive to attributions of luck or chance. Persons scoring high on the Chance scale believe their successes and failures are due to luck or chance.

The Psychology Test designed by the investigators of this study consisted of 24 multiple-choice items. The items were taken from the Instructor's Manual that accompanies the text used in the course. Eight items were testing factual material, eight were testing comprehension, and eight were testing application of the material studied. The items were all taken from a unit on Learning. THe grade-point averages (GPA) were obtained from the university record's office.

Procedure. The Inventory of Learning Processes, (ILP), and Locus of Control inventory were administered during a class period. Students reported their responses to the ILP on scan-tron sheets. Then the ILP was scored for Deep Processing,

Elaborative Processing, Fact Retention and Methodical Study. After the unit on Learning was taught, the Psychology Test was administered. A week later, when students were studying another unit, the Psychology Test was administered again. The Psychology Test was scored for factual, comprehension, application, and total scores. The data from the instruments and GPA for each of the students were recorded on the IBM sheets and then entered into the data bank in the computer.

Intercorrelations for all instruments used and correlations between the scores of the instruments and GPA were computed.

RESULTS

First, the intercorrelations of the subscales in each instrument were analyzed. Data (Table 1) on Locus of Control

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Insert Table 1

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inventory showed that, for this group, only the Powerful Others snd Chance scales correlated significantly (.05 level) and positively.

Although each of the scales in the Inventory of Learning Processes was measuring different information, the intercorrelations (Table 2) showed that there were

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Insert Table 2

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significant (.05 level) and positive relationships between (a) Deep Processing and Elaborative Processing, Fact Retention and

Methodical Study, respectively, (b) Elaborative Processing and Methodical Study, and (c) Factual Retention and Methodical Study. These data are similar to those previously reported (Gadzella, Ginther & Williamson, 1986; Schmeck, 1983).

The intercorrelations among the different subtests of the Psychology Test on test-retest are shown in Table 3.

Insert Table 3

All intercorrelations among the subtests and total of the Psychology Test on the two administrations were positive and significant (.01 level).

Secondly, the correlations between the instruments were analyzed. Correlations among the Locus of Control and Inventory of Learning Processes scales showed (Table 4) that the Deep

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Insert Table 4

Processing scale of the ILP correlated negatively and significantly (.03 level) with Powerful Others and Chance scales of the Locus of Control.

None of the correlations between the scales of the Locus of Control and Inventory of Learning Processes and subtests and totals of the Psychology Test were significant. It might be that the number of the subjects in the present study was too small to detect significant correlations. In addition, the Psychology Test was a multiple-choice test that required only recognition

of a correct response. If the Psychology Test had some essay questions requiring recall of information, the results might be different between the scales of the ILP and the Psychology Test. In addition, the data in the present study did not agreed with that reported by Meier, McCarthy and Schmeck (1984) that the Deep Processing scale of the ILP and internality of the Locus of Control correlated positively.

Correlations between the GPA and scales of the Inventory of Learning Processes and Locus of Control, and subtests and total for the Psychology Test are reported in Table 5. The factual

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Insert Table 5

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subtest and total Psychology Test were the only positive and significant (.05 level) correlations with GPA. It might be that if the number of subjects in the study was larger, the results would be different. It is suggested that if the study is repeated that at least twice as many subjects be included and that the Psychology Test have a larger number of objective items and at least some essay questions.

Scales on Inventory of Learning Processes

(Schmeck, Ribick & Ramanaiah, 1977)

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1. Deep Processing: (18 items) assesses the extent students critically evaluate, conceptually organize, and compare and contrast information they study.

2. Elaborative Processing: (14 items) assesses the extent students translate new information into their own terminology, generate concrete examples from their own experiences, apply new information to their lives, and use visual imagery to encode new ideas.

3. Fact Retention: (7 items) Individuals who score high on this scale carefully process details and specific pieces of new information regardless of what other information - processing strategies they might use. Students who score high on this test perform well on tests calling for dates, places, and other details.

4. Methodical Study: Students who score high on this scale claim to study more often and more carefully than other students. They employ systematic techniques recommended in "how to study" manuals.

Table 1

Intercorrelation Among the Levenson's Locus of Control Sclaes (Internal, Powerful Others, and Chance) for 50 Students

Scales	I	P	C
1. Internal (I)	-		
2. Powerful Others (P)	.16	-	
3. Chance (C)	-.01	.62*	-

*$p < .001$

Table 2

Intercorrelations Among the Scales of
Inventory of Learning Processes for
50 Students

Scales	1	2	3	4
1. Deep Processing	-			
2. Elaborative Processing	.37*	-		
3. Fact Retention	.28*	.13	-	
4. Methodical Study	.41*	.57*	.28*	-

*$p < .05$

Table 3

Intercorrelation Among the Factual, Comprehension and Application Subscales of the Psychology Test on Test 1 and Test 2 Administrations for 50 Students

Test	Subscale	Test 1				Test 2			
		1	2	3	4	1	2	3	4
1.	1. Factual	-							
	2. Compreh.	.58*	-						
	3. Appl.	.46*	.34*	-					
	4. Total	.88*	.81*	.70	-				
2.	1. Factual	.68*	.42*	.33*	.62*	-			
	2. Compreh.	.47*	.80*	.35*	.67*	.36*	-		
	3. Appl.	.39*	.47*	.58*	.58	.41*	.51*	-	
	4. Total	.66*	.72*	.53*	.79*	.76*	.80*	.80*	-

*$p < .01$

Table 4

Correlations Among Locus of Control Scales and Scales in the Inventory of Learning Processes for 50 Students

Inventory of Learning Processes	Locus of Control		
	Internal	Powerful Others	Chance
1. Deep Processing	.02	-.33*	-.32*
2. Elaborative Processing	.10	.18	.14
3. Fact Retention	.14	-.04	-.07
4. Methodical Study	.16	.09	.07

*$p < .03$

Table 5

Correlations Among Factual, Comprehension, Application and Total of the Psychology Test and GPA.

Test	GPA
I. Psychology Test	
Factual	.31*
Comprehension	.19
Application	.28
Total	.34*
II. Locus of Control	
Internal	-.09
Powerful Others	-.09
Chance	-.21
III. Inventory of Learning Process	
Deep Processing	.19
Elaborative Processing	-.03
Fact Retention	.13
Methodical Study	-.05

*$p < .04$

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